REMARKS

Applicants thank Examiner Pompey for participating in a personal interview with applicant's representatives on May 28, 2008. The substance of the interview is incorporated into the following remarks.

Claims 2-4 and 6-14 are currently pending, with claims 2-4 and 6-8 being independent. Claim 2 has been amended for clarity to recite that the electric voltages applied to the pixel electrode are of only a single polarity. Claims 6-8 have been amended to incorporate the allowable subject matter of dependent claim 9, which has itself been amended to remove its dependency from claims 6-8. Claim 10 has been amended for clarity, and claims 6 and 7 have been further amended to recite that the pixel electrode is arranged such that the first conductive film extends continuously under the entire pixel electrode. Support for the amendment to claims 6 and 7 may be found in the application at least at Figs. 6, 8 and 14 and in the accompanying text. As shown in Fig. 6 and discussed in the application at page 17, lines 9-10, a conductive film 200 is formed on a substrate 400. As also shown in Fig. 6 and discussed in the application at page 17, lines 18-20, a pixel electrode 467 is formed over the conductive film 200. As shown in Fig. 8, the pixel electrode 467 extends over only a portion of the substrate. Thus, the conducting film 200, which extends over the entire substrate, extends continuously under the entire pixel electrode 467, which is formed over the conductive film 200 and extends over only a portion of the substrate. No new matter has been introduced.

Applicants acknowledge with appreciation the Examiner's allowance of claims 2-4, and the Examiner's indication that claims 9-14 are directed to allowable subject matter.

During the interview, Examiner Pompey expressed some concerns regarding the meaning of the terms "electric voltages having the same polarity" recited in claim 2 and the terms "are made monostable" recited in claims 2, 6 and 7. In response, applicants have amended claim 2 for clarity to recite that the electric voltages applied to the pixel electrode while the liquid crystals are made monostable are of only a single polarity. Applicants have considered the Examiner's position regarding the terms "are made monostable" but do not feel that an amendment is necessary to clarify these terms. Each of claims 2, 6 and 7 recites that the electric

field makes the liquid crystals monostable which, by necessity, requires that the liquid crystals be in one or more other states prior to them being made monostable by the electric field. Applicants submit that it is not necessary to explicitly recite these one or more other states for clarity. Nevertheless, to address the Examiner's concerns, applicants have amended each of claims 6-8 to recite "wherein said liquid crystals are smectic liquid crystals," which helps clarify the terms "are made monostable" and is an allowable feature recited in dependent claim 9.

Independent claim 6 has been rejected as being unpatentable over Dubal (U.S. Patent No. 6,704,086) in view of Yasukawa (U.S. Patent No. 6,232,142). Claim 6, as amended, recites, among other features, "wherein said liquid crystals are smectic liquid crystals," "applying an electric field to said liquid crystals by said first conductive film and said second conductive film so that said liquid crystals are made monostable," and "wherein forming the pixel electrode over the second insulating film comprises arranging the pixel electrode such that the first conductive film extends continuously under the entire pixel electrode." Applicants request reconsideration and withdrawal of the rejection of claim 6 because neither Dubal, Yasukawa, nor any proper combination of the two describes or suggests these features.

With respect to the first feature, the Examiner acknowledged, through his allowance of dependent claim 9, that none of the cited art describes or suggests the features of claim 6 in combination with the additional feature that the liquid crystals are smectic liquid crystals, as recited in previously pending dependent claim 9. Accordingly, applicants submit that Dubal and Yasukawa, alone or in combination, fail to describe or suggest this feature, and, therefore, for at least this reason, the rejection of claim 6 should be withdrawn.

With respect to the second feature, applicants submit that neither Dubal, Yasukawa, nor any proper combination of the two describes or suggests applying an electric field to liquid crystals by a first conductive film and a second conductive film so that the liquid crystals are made monostable, where a thin film transistor having a source region and a drain region is formed between the first conductive film and the second conductive film, as required by claim 6.

Dubal describes a monostable ferroelectric liquid crystal (FLC) geometry in an active matrix liquid crystal display in which the FLC material is oriented with the aid of comparatively

high voltages in such a way that only one stable position results. Dubal asserts that by making the FLC material in a pixel have only one stable position it is possible to generate intermediate states in the pixel that correspond to a number of different brightness levels (gray shades). Dubal, however, fails to describe or suggest which conductive film or films are involved in the application of an electric field to generate the high voltage, and, therefore, necessarily fails to describe or suggest application of an electric field to monostabilize liquid crystals in an active matrix liquid crystal display device by two conductive films between which is formed a transistor that includes a semiconductor layer having a source region and a drain region.

The Examiner refers to Yasukawa to remedy this deficiency. Specifically, the Examiner relies on the thermally conductive film 4 of Fig. 9 of Yasukawa as corresponding to the recited first conductive film and the opposite electrode 33 of Fig. 7 of Yasukawa as corresponding to the recited second conductive film. The Examiner asserts that, in view of Dubal's teachings, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Dubal's device to employ Yasukawa's pixel structure and apply a high voltage between the thermally conductive film 4 and the opposite electrode 33 to thereby monostabilize the liquid crystal in the pixel in accordance with Dubal's teachings.

As discussed during the interview, applicants submit that a person of ordinary skill in the art would not combine Dubal's and Yasukawa's teachings in the manner contemplated by the Examiner. In particular, if a high voltage were applied between the conductive film 4 and the opposite electrode 33 of Yasukawa, as suggested by the Examiner based on Dubal's teachings, the liquid crystal material above the pixel electrode 19 of Yasukawa's pixel would not be monostabilized because the conductive film 4 does not extend below the vast majority of the pixel electrode 19. See Figs. 8 and 9 of Yasukawa. Moreover, the liquid crystal material above the scanning line 7, drain electrode 8, and data line 9 would also fail to monostabilize because of the electric field shielding effect of the scanning line 7, drain electrode 8 and data line 9. Thus, a person of ordinary skill in the art would not have had any reason to apply a high voltage between the conductive film 4 and the opposite electrode 33 based on Dubal's teachings because the application of such a voltage does not result in the monostabilization of the liquid crystal

material in Yasukawa's pixel and, in particular, in the liquid crystal material above the pixel electrode 19 of Yasukawa's pixel and, therefore, does not achieve the desirable intermediate states that correspond to different brightness levels, which is the very purpose Dubal teaches for applying the high voltage in the first place.

With respect to the third feature, applicants submit that neither Dubal, Yasukawa, nor any proper combination of the two describes or suggests forming a pixel electrode over the recited second insulating film by arranging the pixel electrode such that the recited first conductive film extends continuously under the entire pixel electrode. Dubal fails to describe a pixel structure in any detail and, consequently, fails to describe or suggest this feature. As stated above, Yasukawa's conductive film 4, which the Examiner equates with the recited first conductive film, does not extend continuously under the entire pixel electrode 19, which the Examiner equates to the recited pixel electrode. Rather, as shown in Figs. 8 and 9 of Yasukawa, the conductive film 4 only extends under a small peripheral portion of the pixel electrode 19.

For at least these reasons, applicants request reconsideration and withdrawal of the rejection of claim 6.

Independent claims 7 and 8 have been rejected as being unpatentable over Dubal in view of Yasukawa and Sako (U.S. Patent No.6,108,061).

Like claim 6, claim 7, as amended, recites: (1) liquid crystals that are smectic liquid crystals; (2) the application of an electric field to liquid crystals by a first conductive film and a second conductive film so that the liquid crystals are made monostable, where a thin film transistor having a source region and a drain region is formed between the first conductive film and the second conductive film; and (3) the formation of a pixel electrode over the recited second insulating film by arranging the pixel electrode such that the recited first conductive film extends continuously under the entire pixel electrode. Accordingly, applicants request reconsideration and withdrawal of the rejection of claim 7 for the reasons discussed above with respect to claim 6 and because Sako, which is cited for the purpose of showing application of an ultraviolet ray to liquid crystals, does not remedy the failure of Dubal and Yasukawa to describe or suggest the above features.

Like claim 6, claim 8, as amended, recites: (1) liquid crystals that are smectic liquid crystals; and (2) the application of an electric field to liquid crystals by a first conductive film and a second conductive film so that the liquid crystals are made monostable, where a thin film transistor having a source region and a drain region is formed between the first conductive film and the second conductive film. Accordingly, applicants request reconsideration and withdrawal of the rejection of claim 8 for the reasons discussed above with respect to claims 6 and 7.

Applicants also note that claim 8, as amended, additionally recites forming a first conductive film over a first surface of a first substrate and forming a thin film transistor over a second surface opposite to said first surface of said first substrate. Applicants requests reconsideration and withdrawal of the rejection of claim 8 for the additional reason that neither Dubal, Yasukawa, Sako, nor any proper combination of the three describes or suggests this feature.

In particular, Dubal fails to describe this feature because Dubal fails to describe a pixel structure in any detail. Yasukawa fails to describe this feature because Yasukawa's thermally conductive film 4, which the Examiner equates with the recited first conductive film, and Yasukawa's TFT 50, which the Examiner equates with the recited TFT, are both formed on the same surface of the same substrate, as shown in Fig. 9. Sako also fails to describe or suggest this feature.

For at least this additional reason, applicants request reconsideration and withdrawal of the rejection of claim 8.

Applicants submit that all claims are in condition for allowance.

Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

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